

REMARKS

Please reconsider the application in view of the above amendments and the following remarks. Applicant thanks the Examiner for indicating that claim 45 contains allowable subject matter.

I. Interview Summary

Applicant thanks the Examiner for courtesies extended during the personal interview conducted on April 7, 2006, in which U.S. Patent No. 4,919,220 was discussed. The Applicant has reviewed the Interview Summary of the Interview of April 7, 2006, submitted by the Examiner and believed that it is complete and accurately represents the substance of the Interview of April 7, 2006. Further, the Applicant believes that no additional written statement pursuant to MPEP § 713.04 are necessary. If this belief is incorrect, the Examiner is requested to call the undersigned or his associates at the telephone number listed below.

II. Disposition of the Claims

Claims 1, 3-8, 11-16, 18-26, 28-30, and 40-47 are pending in the application. Claims 1, 16, 18, 40, and 41 are independent. The remaining claims depend, directly or indirectly, from claims 1, 16, 18, 40, and 41.

III. Claim Amendments

Claims 1, 16, 18, 40, and 41 have been amended by this reply to clarify the present invention recited. Support for these amendments can be found in FIGS. 6A-6B, 7A-7D, and 8 at least. No new matter has been added.

IV. Rejection(s) under 35 U.S.C. § 102

Claims 1, 3-4, 8-9, 11, 16-19, 23-24, 27-28, and 40-44 stand rejected under 35 U.S.C. § 102 as anticipated by U.S. Patent No. 4,919,220 issued to Fuller ("Fuller"). To the extent that this rejection still applies to the claims as amended, the rejection is respectfully traversed.

Claims 1, 16, 18, and 40 recite drill bit inserts, drill bits, and a method of drilling, all comprising inserts having a diamond-impregnated insert body and a thermally stable shearing portion disposed on said diamond-impregnated insert body, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, where the leading edge corresponds to the rotational direction of a drill bit.

Claim 41 recites an insert comprising an abrasive insert body having a mixture of ultra-hard material and a less abrasion resistant matrix material, wherein the ultra-hard material is impregnated in the matrix of the less abrasion resistant material and a thermally stable shearing element on said insert body, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, where at least a portion of the abrasive insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, and where the leading edge corresponds to the rotational direction of a drill bit.

Fuller discloses a drill bit where each cutting element includes a thin polycrystalline diamond hardfacing layer bonded to a thicker backing of tungsten carbide. Each cutting element is bonded to a stud which is received in a socket in the bit body. An abrasion portion that is impregnated with diamond particles may be spaced rearwardly, with respect to the rotational direction of the bit, of each of the diamond cutting elements, as shown in Figs. 6-7.

Fuller does not disclose nor teach a drill bit insert with a diamond-impregnated or abrasive insert body and a thermally stable shearing portion disposed thereon, where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, where the leading edge corresponds to the rotational direction of a drill bit. Rather, the diamond impregnated abrasion element of Fuller is located behind the cutting element such that no portion of the abrasion element forms, along with the thermally stable shearing element, a leading edge of the inset. Advantageously, embodiments of the present invention provide for a cutting element that can both “grind” and “shear” a formation, to increase the overall rate of penetration and/or wear resistance of a bit and to provide better results when drilling formations having both hard and soft characteristics, such as sand/shale formations.

For a claim to be anticipated, “every element and limitation of the claimed invention must be found in a single prior art reference, arranged as in the claim.” *Brown v. 3M*, 265 F.3d 1349, 1351 (Fed. Cir. 2001). In view of the above, Fuller fails to teach each limitation recited in claims 1, 16, 18, 40, and 41 as is required to support a rejection under § 102. Thus, claims 1, 16, 18, 40, and 41 are patentable over Fuller. Dependent claims are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

V. Rejection(s) under 35 U.S.C. § 103

Claims 5-6, 12-13, 25-26, and 29-30 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent No. 5,279,374 (“Siever”). To the extent that this rejection still applies to the claims as amended, the rejection is respectfully traversed.

As discussed above with respect to claims 1, 16, and 18, from which claims 5-6, 12-13, 25-26, and 29-30 depend, Fuller neither shows nor suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, wherein the leading edge corresponds to the rotational direction of the drill bit, as recited in claims 1, 16, and 18. Siever, which the Examiner only asserts as teaching a tungsten carbide coating, does not provide that which Fuller lacks, with respect to independent claims 1, 16, and 18.

In view of the above, Fuller and Siever, whether considered separately or in combination, fail to show or suggest the present invention as recited in claims 1, 16, and 18. Thus, claims 1, 16, and 18 are patentable over Fuller and Siever. Claims 5-6, 12-13, 25-26, and 29-30, which depend from claims 1, 16, and 18 respectively, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 7 and 22 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent Publication No. 2001/0047891 ("Truax"). This rejection is respectfully traversed.

As discussed above with respect to claims 1 and 18, from which claims 7 and 22 depend, Fuller neither shows or suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, where the leading edge corresponds to the rotational direction of the

drill bit, as recited in claims 1 and 18. Truax, which the Examiner only asserts as teaching an insert with thermally stable polycrystalline diamonds, does not provide what Fuller lacks with respect to independent claims 1 and 18.

In view of the above, Fuller and Truax, whether considered separately or in combination, fail to show or suggest the present invention as recited in claims 1 and 18. Thus, claims 1 and 18 are patentable over Fuller and Truax. Claims 7 and 22, which depend from claims 1 and 18, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested

Claim 14 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent No. 4,943,488 ("Sung"). This rejection is respectfully traversed.

As discussed above with respect to claim 1, from which claim 14 depends, Fuller neither shows or suggests a diamond impregnated insert body and a thermally stable shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, where the leading edge corresponds to the rotational direction of the drill bit, as recited in claim 1. Sung, which the Examiner only asserts as teaching coated diamond particles, does not provide that which Fuller lacks, with respect to independent claim 1.

In view of the above, Fuller and Sung, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 1. Thus, claim 1 is patentable over Fuller and Sung. Claim 14, which depends from claim 18, is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 15 stands rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of Sung, as applied to claim 14, and further in view of U.S. Patent No. 3,318,399 (“Garner”). This rejection is respectfully traversed.

As discussed above with respect to claim 14, from which claim 15 depends, Fuller and Sung neither show or suggest a diamond impregnated insert body and a thermally stable shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, where the leading edge corresponds to the rotational direction of the drill bit, as recited in claim 1. Garner, which the Examiner only asserts as teaching coated diamond particles, does not provide that which Fuller and Sung lack, with respect to independent claim 1.

In view of the above, Fuller, Sung, and Garner, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 1. Thus, claim 1 is patentable over Fuller, Sung, and Garner. Claim 15, which depends from claim 18, is allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claim 20-21 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of U.S. Patent No. 6,193,000 (“Caraway”). This rejection is respectfully traversed.

As discussed above with respect to claim 18, from which claims 20-21 depend, Fuller neither shows or suggests a diamond impregnated insert body and a thermally stable

shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, wherein the leading edge corresponds to the rotational direction of a drill bit, as recited in claim 18. Caraway, which the Examiner only asserts as teaching a bit body made of diamond impregnated tungsten carbide matrix, does not provide that which Fuller lacks, with respect to independent claims 18.

In view of the above, Fuller and Caraway, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 18. Thus, claim 18 is patentable over Fuller and Caraway. Claims 20-21, which depend from claim 18, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Claims 46-47 stand rejected under 35 U.S.C. § 103 as being unpatentable over Fuller in view of Garner. This rejection is respectfully traversed.

As discussed above with respect to claim 41, from which claims 46-47 depend, Fuller neither shows or suggests a abrasive insert body and a thermally stable shearing portion disposed thereon, where the thermally stable shearing portion includes thermally stable polycrystalline diamond, and where at least a portion of the diamond-impregnated insert body and at least a portion of the thermally stable shearing portion form a leading edge of the insert, wherein the leading edge corresponds to the rotational direction of a drill bit, where the leading edge corresponds to the rotational direction of the drill bit as recited in claim 41. Garner, which the Examiner only asserts as teaching a drill bit with larger and lower concentration of diamond

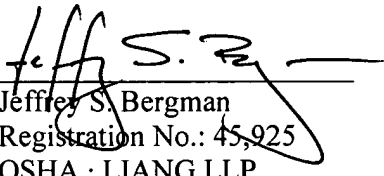
is better when drilling a softer formation and smaller, larger diamond when drilling a harder formation, does not provide that which Fuller lacks, with respect to independent claims 41.

In view of the above, Fuller and Garner, whether considered separately or in combination, fail to show or suggest the present invention as recited in claim 41. Thus, claim 41 is patentable over Fuller and Garner. Claims 46-47, which depend from claim 41, are allowable for at least the same reasons. Accordingly, withdrawal of this rejection is respectfully requested.

Applicant believes this reply is fully responsive to all outstanding issues and places this application in condition for allowance. If this belief is incorrect, or other issues arise, the Examiner is encouraged to contact the undersigned or his associates at the telephone number listed below. Please apply any charges not covered, or any credits, to Deposit Account 50-0591 (Reference Number 05516/147002).

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Respectfully submitted,

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